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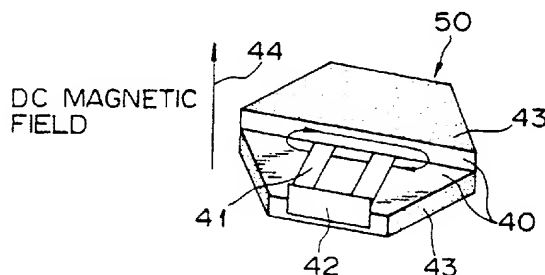
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Multi-layer microwave circulator.

A multi-layer circulator includes a circulator element (50) with inner conductors (41) having a predetermined pattern and a insulating ferromagnetic material body (40) closely surrounding the inner conductors. The insulating ferromagnetic material body is formed in a single continuous layer by firing a plurality of ferromagnetic material layers. The circulator also includes a plurality of terminal electrodes (76) formed on side surfaces of the circulator element and electrically connected to one ends of the inner conductors, a plurality of circuit elements (51a, 51b, 51c) electrically connected to the terminal electrodes, and exciting permanent magnets (52, 53) for applying a dc magnetic field to the circulator element.

Fig. 4





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EUROPEAN SEARCH REPORT

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EP 94 40 0682

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
A	PATENT ABSTRACTS OF JAPAN vol. 15 no. 183 (E-1065) ,10 May 1991 & JP-A-03 044011 (MURATA MFG CO LTD) 25 February 1991, * abstract *	1,16,26	H01P1/387 H01P11/00
A	DE-A-29 17 124 (LICENTIA PATENT-VERWALTUNGS-GMBH) * page 5, line 11 - page 6, line 4; figures 1,2 *	1,7-9, 16, 23-26, 33-35	
A	IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, vol. 15, no. 12, December 1967 NEW YORK US, pages 748-750, B. HERSHENOV 'Microstrip junction circulator for microwave integrated circuits' * page 749, right column, line 1 - page 750, left column, line 57 *	1,16,26	
P,X	GB-A-2 266 412 (MURATA MFG CO LTD) * page 37, line 1 - page 38, line 17; figures 21-23 *	1,7-9	
P,X	GB-A-2 269 942 (MURATA MFG CO LTD) * the whole document *	1,7-9	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 10 August 1995	Examiner Den Otter, A
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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